DISCUSSION OF THE CLAIMS

Support for amended Claim 1 is found at specification page 31, line 25 to continuing page 32, line 12, Example 1-1 wherein a metal component ratio in an oxide mixture is the same as that in a magnesium aluminum titanate and the mixture comprises 20 mol% of α-alumina, 60 mol% of titanium oxide and 20 mol% of magnesium oxide, which provides $x = 0.5$ in an empirical formula of $Mg_xAl_{2(1-x)}Ti_{(1+x)}O_5$.

REMARKS/ARGUMENTS

The rejection of Claims 1, 4-7, 12-16 and 18-22 under 35 U.S.C. 103(a) as being unpatentable over Ono (US 4,483,940) in view of Buscaglia et al (Journal of Materials Science 1996, 31: 5009-5016) and Fukuda et al (JP 2002-145659) or further in view of Noda (US 2001/0056034) is traversed.

Ono discloses a method for the manufacture of a ceramic honeycomb carrier. Ono further discloses a ceramic honeycomb carrier of cordierite, mullite, α-alumina, zirconia, titania, titanium phosphate, aluminum titanate petalite, spodumene, aluminosilicate, aluminum titanate magnesia, aluminum titanate mulite and magnesium silicate (see Ono, Col. 8, lines 38-47). The Office noted that "[O]no fails to specifically teach that the component of the honeycomb carrier is a sintered product containing Mg, Al, Ti containing compound with an empirical formula $Mg_xAl_{2(1-x)}Ti_{(1+x)}O_5$ ($0 \leq x \leq 1$) and with addition of alkali feldspar represented by $(Na_yK_{1-y})AlSi_2O_8$ where $0 \leq y \leq 1$ (see Office Action, page 2). In fact, Applicants further disclose that the empirical formula $Mg_xAl_{2(1-x)}Ti_{(1+x)}O_5$ has $0 < x \leq 0.5$ (see amended Claim 1).

Buscaglia discloses decomposition of $Al_{2(1-x)}Mg_xTi_{(1+x)}O_5$ solid solution with x = 0.0, 0.2, 0.4, 0.5 and 0.6 in the temperature range of 900 to 1175 °C and shows that at 1000 °C, the decomposition of the $Al_{2(1-x)}Mg_xTi_{(1+x)}O_5$ solid solution is always complete or almost complete when $x \leq 0.5$ (see Buscaglia, page 5014, right Col. lines 13-28). In fact, Buscaglia further discloses that (see Buscaglia, page 5014, right Col. lines 42-51):

> From the point of view of practical applications only the solid solution with $x = 0.6$ is stable at all temperatures between 900 and 1280 °C. However, the thermal stability should be tested for times longer than 250 h to assess the effective reliability of such a material in potential applications. Among the Al_2TiO_5 richer materials, the composition with $x = 0.2$ offers a better thermal stability, but prolonged exposure to temperatures in the range 900–1100 °C should be avoided in any case.

As disclosed above, Buscaglia teaches that the $Al_{2(1-x)}Mg_xTi_{(1+x)}O_5$ solid solution with x = 0.6 is appropriate for practical applications and teaches away from x of less than 0.5 in any case requiring a prolonged thermal exposure. Thus, in light of the teachings of Buscaglia, one of ordinary skilled in the art would not have even considered a compound of $Mg_xAl_{2(1-x)}Ti_{(1+x)}O_5$ where $0 < x \leq 0.5$ for a honeycomb carrier as in amended Claim 1, where the honeycomb carrier for an automobile requires a long term stability. Additionally, neither Ono nor Buscaglia disclose or suggest adding an alkali feldspar to the magnesium aluminum titanate as in amended Claim 1.

As to Fukuda and Noda, Fukuda discloses an aluminum titanate compound having an alkali feldspar compound of $Na_yK_{1-y}AlSi_3O_8$ where $0 \leq y \leq 1$. However, Fukuda fails to disclose a honecomb carrier of a compound of empirical formula $Mg_xAl_{2(1-x)}Ti_{(1+x)}O_5$ where $0 < x \leq 0.5$. Noda discloses a catalyst for purification of exhaust gas. However Noda discloses neither a compound of empirical formula $Mg_xAl_{2(1-x)}Ti_{(1+x)}O_5$ where $0 < x \leq 0.5$ nor adding an alkali feldspar to the magnesium aluminum titanate. Thus, in light of the teachings of Ono, Buscaglia, Fukuda and Noda, one of ordinary skill in the art would not have foreseen the honeycomb carrier comprising a compound of empirical formula $Mg_xAl_{2(1-x)}Ti_{(1+x)}O_5$ where $0 < x \leq 0.5$ and an alkali feldspar compound of $Na_yK_{1-y}AlSi_3O_8$ where $0 \leq y \leq 1$ as in amended Claim 1.

Furthermore, the newly submitted declaration demonstrates that the presently claimed honeycomb carrier having a magnesium aluminum titanate compound of $Mg_xAl_{2(1-x)}Ti_{(1+x)}O_5$ and an alkali feldspar compound of $Na_yK_{1-y}AlSi_3O_8$ provides remarkable improvement on the long term stability of the magnesium aluminum titanate compound of $Mg_xAl_{2(1-x)}Ti_{(1+x)}O_5$ particularly where $0 < x \leq 0.5$. None of Ono, Buscaglia, Fukuda and Noda disclose or suggest such an improvement on the long term stability of the magnesium aluminum titanate

compound of $Mg_xAl_{2(1-x)}Ti_{(1+x)}O_5$ particularly where $0 < x \leq 0.5$ by adding an alkali feldspar compound of $Na_yK_{1-y}AlSi_3O_8$.

Withdrawal of the rejection is respectfully requested.

Consequently, in view of the present amendment, no further issues are believed to be outstanding in the present application, and the present application is believed to be in condition for formal allowance. An early and favorable action is therefore respectfully requested.

Respectfully submitted,

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